

DOCUMENT RESUME

EM 009 214

ED 054 627

AUTHOR Forst, Florence H.
TITLE Videotaped Aids for Instruction in Educational Psychology: An Analysis of Variables Associated With Student Achievement.
INSTITUTION California State Coll., Long Beach.n
PUB DATE Apr 71
NOTE 22p.

EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS Audiovisual Aids; College Instruction; *Comparative Analysis; Individual Differences; *Intermode Differences; *Predictive Ability (Testing); *Programed Instruction; Television Research; *Video Tape Recordings

ABSTRACT

Two ways of teaching a course in adolescent development and learning were compared. Sections of normal size were taught as usual, while large sections had instruction augmented with televised illustrations. With the exception of these illustrations, resources were the same for both classes and included a programed text. Results on two types of tests, information and behavioral judgment, showed that student achievement was equally high, regardless of size of class. Furthermore, the larger classes showed greater uniformity of scores than did the smaller classes. Achievement on information tests was not clearly related to achievement on behavioral judgment tests. First tests of either type were better indicators of students' final performance than was an information pre-test. Characteristics found to be significantly associated with higher achievement were sex, marital status, major in college, and grade point averages. One unexpected finding was that nonacademic students (those with majors in applied fields) performed better than academic students did on tests involving behavioral judgment. (Author/JK)

ED054627

VIDEOTAPED AIDS FOR INSTRUCTION IN EDUCATIONAL PSYCHOLOGY:
An analysis of variables associated with student achievement.

Florence H. Forst

School of Education
California State College, Long Beach

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Abstract

In the academic year 1968-69, two ways of teaching the course Adolescent Development and Learning were compared. Large sections were augmented by televised illustrations while other sections of normal size were taught as usual. With the exception of the media used for illustration, resources were the same for both classes and included a programmed textbook. Differences in student achievement on two different types of tests were analyzed, relationships between tests were examined, and student characteristics associated with higher or lower test performance were identified.

Results showed that student achievement on either type of test was as high in the larger classes augmented by television and furthermore showed greater uniformity than in smaller classes. Achievement on tests of Information was not clearly related to achievement on tests of Behavioral Judgment based on films and tapes. First tests of either type were better indicators of students' final performance than was an Information Pre-test. Characteristics found to be significantly associated with higher achievement were Sex, Marital Status, Major in College*, MTAI score, and Grade Point Average.

*The unexpected finding that Nonacademic students (Applied fields) outperformed Academic students on tests of Behavioral Judgment have important implications for curriculum planning,

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Introduction

A present problem in higher education is how to improve instruction while at the same time dealing with complications caused by increased enrollments. Attempts at innovation in instruction are inseparable from consideration of the numbers of students to be instructed. The question of whether there are better teaching methods at the college level is tied to the question of whether classes can be increased in size without sacrificing learning objectives. The two are really one question: Are there better methods of instruction than we have been using when we go to larger classes?

The study here reported was an attempt to answer this question in a core course for teacher candidates. Briefly, the major finding was that class size could be safely increased without jeopardizing learning when class activities were augmented by televised illustrations and programmed instruction. While differences in achievement were not significant, learning in the larger television-augmented classes was more uniform than that in the classes as usual. In addition, certain student characteristics were found to provide clues useful in predicting individual learning and planning activities for classes composed of students from widely dissimilar disciplines.

- 1) Individual students did not perform equally well on two different types of test: an objective information test, and an audio-visual behavioral test.
- 2) Students from academic subject areas performed better on information tests, whereas students from applied fields performed better on behavioral tests.
- 3) It was possible to prescribe needed attention on the basis of the first tests of both types.

Initially, experimentation with television as an aid to instruction was an outgrowth of a search for better illustrations concerning adolescent development. With the cooperation of the college ITV services, some videotapes of interviews with adolescents had been produced for use as discussion openers in the course in educational psychology required for prospective Secondary School teachers. A major objective of the course was that of providing a background of knowledge about human development in general and the stage of adolescence in particular. Most of the existing commercially-made films were unsatisfactory for this purpose. Either the geographical settings of the films were too dissimilar to those of California or the costumes and customs of people in the films were laughably out of date. Most important, certain theoretical concepts that were presented were now invalid.

The best and most authoritative of the various series of developmental films was based on a theory of child development that became highly questionable when extended to the adolescent years.² The series gave the erroneous impression that certain emotional behaviors are characteristic of adolescents at particular ages and are describable by predictable cyclical changes. Authenticity of the adolescent behaviors was also suspect because professional actors, or amateurs carefully rehearsed, portrayed the characteristics that were assumed to be normative. Other discrepancies were the locale of the films in eastern Canada and the date of production in the early 1950's. With so little similarity to their own situation, California students have difficulty in seeing how adolescents depicted on the screen resemble those whom they

will one day be teaching. Relevant illustrations are essential not only for exemplifying theory but also for developing skills in observation and interpretation of behaviors that will transfer to making judgments about pupils in the classroom. The more examples of children in unrehearsed situations, the better the connection between factual knowledge and its application to specific cases, and since children can seldom be brought into college classes for direct observation, some form of visual recording is the next best thing.

The idea of making our own films was discarded in favor of producing videotapes for several reasons. Television not only is a rapid way of capturing spontaneous behavior but also permits immediate playback. Videotape is reuseable; unsatisfactory programs can be erased and revisions can be re-recorded. Thus in the long run television proved less expensive than film in cost of materials, processing, and replacement.

The type of TV production which proved most useful for illustrating adolescent development was the informal interview. Adolescents, usually four to a group, were brought from nearby junior and senior high schools to the college TV studio and were recorded in conversation with one of the counseling faculty. A second type of production that was used to illustrate learning processes was the videotaped microteaching. Students acting as "teachers" were televised in interaction with pupils, after which the tapes were re-played for analysis of the behaviors. A third type, used to illustrate classroom behavior problems, was the sociodrama. Students enacted a critical teaching incident, posing a problem to be solved through class discussion.

These three types of TV programs best simulated the kinds of behavior that the prospective teacher needed to observe and were the basis for the experimental procedures.

Procedures

The study was conducted in two phases: a pilot phase in the Fall semester and a repeat phase in the Spring. During the pilot phase, the interviews with adolescents, student micro-teachings, and sociodramas were produced and used in the larger class. Alternate activities were carried out in the regular class. Tests were designed and administered to measure attainment of two course objectives: 1) acquisition of information and theory, and 2) development of skill in observing and interpreting behavior. During the repeat phase, the videotapes were reshown in the larger class, again with alternates in the regular class; and the same tests were again administered.

The pattern of instruction was one of lecture-illustration-discussion. During the first of three weekly periods, the same lectures on theoretical concepts were given in both classes; during the second period, concepts were illustrated in some way; during the third period, the illustrations were related to assigned readings through discussion (panel discussions in the larger sections and small group discussion in the regular sections). Although the media for illustration and the form of discussion varied, the content covered was the same. The two texts used were Understanding Adolescence edited by James F. Adams, and a programmed text, Educational Psychology by Janice T. Gibson. Both supplemented the lectures and provided the basis for testing.

Tests were of two types: Information, which measured the students' ability to identify statements consistent with facts and theory in the texts; Behavioral, which measured the students' ability to observe behavioral cues and draw logical inferences from these and other data. Information tests were of the usual multiple-choice variety with items on printed sheets; Behavioral tests were less conventional, examples of behavior or case studies being presented on film and followed by structured response sheets. A pair of tests, one of each type, was given at two points in time during the course with a comprehensive final pair of tests at the end. A pre-test determined the students' entering level of knowledge about the course, the same items being embedded in the Final to provide a post-test.

The Sample

In addition to test data, personal data about the students were obtained, including scores on the Minnesota Teacher Attitude Inventory and GPA's. These were examined for possible associations with test performance and to see if there were any differences in the composition of the classes. It was not assumed that the students sampled were representative of a normally distributed population since it was not possible to randomize selection into the sections of the course that were to be compared. Rather, enrollment was by customary registration in which students chose whichever section they wished from among a dozen being offered. Later examination of frequencies in the various data categories revealed no significant differences in the distribution of any characteristic, which leads to the following description of the sample as a whole:

Sex: about evenly divided between men and women;

Age: most between 20 and 25, with less than a fourth over 25;

Major: two-thirds classifiable as Academic (enrolled in the School of Letters and Sciences) with the other third classifiable as Non-Academic (enrolled in Schools of Applied Arts, Business, Fine Arts, and Physical Education);

College Year: mostly Juniors and Seniors, evenly divided, with one in eight a Graduate student;

Employment: about half working fewer than ten hours per week, and a fourth working more than twenty hours per week;

Teaching Experience: Half had no work experience that was in any way related to teaching, about a third had such experience as tutoring or leading youth groups, and a sixth had some in-school experience such as serving as teacher aides;

Family Background: one-half of the students had fathers who were in skilled occupations or trades, one-fourth in unskilled or semi-skilled, and one-fourth in managerial occupations and professions; almost half of the students were either first-born or only children in the parental families; fewer than a fourth of the fathers had completed four years of education beyond highschool and fewer than a tenth of the mothers;

Marital Status: about two-thirds of the students were single, a third were married with one in three having one or more children;

Credential Objective: nearly all were candidates for the Secondary Teaching Credential, with only one in forty students taking the course as an elective.

All students for whom test data and personal data were complete were included in the study, yielding a total of 215. Of these, 90 students were in the Fall pilot phase: 57 in the television section and 33 in the regular section. There were 125 students in the repeat phase: 83 in the television section and 43 in the regular section. The Fall and Spring television enrollment combined was 139 students, as compared with 76 combined regular enrollment. Data were analyzed for the year as a whole in addition to separate analyses for each semester, thus accumulating a sample of sufficient size for considerable confidence in the findings.

Hypotheses

The study was begun with certain expectations as to the findings. It was thought that, given the aid of programed instruction, there would be no difference in performance on the Information tests, whether classes were larger or smaller, or had more or less contact with the instructor. It was also thought that there would be no difference in performance on the Behavioral tests, since practice in viewing good televised illustrations in the larger classes would compensate for discussion of written case studies in the smaller classes and more interaction with the instructor.

Although differences in achievement were not expected by type of class, they were expected by type of student. It was likely that different aptitudes were involved in taking the two kinds of tests, and if so, those students who scored high on information tests might not be the same as those who would score high on behavioral tests and vice versa. Thus certain

characteristics might accompany higher or lower performance on either type of test.

For instance, one characteristic likely to be associated with test performance was that of sex. Women students could be expected to score high on the information tests since they generally make better scores than males on tests of a verbal nature such as the usual written objective test, and generally get better school marks.³ Women might also score high on the behavioral tests since recent aptitude research indicates a tendency for females to outperform males on measures of behavioral or social intelligence.¹ Another characteristic likely to be associated with information tests would be that of family background. Research shows children of parents from higher socio-economic classes as assessed by education and occupation to be achieving better in school than children from lower social classes. Ordinal position in the parental family might be a factor,³ since firstborn children frequently are high achievers.

Age might be a factor in that older students, particularly married ones, could be expected to have more interest in matters of child development and thus to score better than younger and unmarried students. Time might also be a factor in that students with less time to study because of spending more time in outside employment would not be so likely to score high as would full time students. However, students who had been employed in some way related to the occupation of teaching might score better than those who lacked experience with the professional concerns of the course and working with children.

Finally it was expected that students from the so-called academic majors would score higher than students from nonacademic majors on both types of tests. For one reason, students who enroll in the School of Letters and Sciences are often high in verbal and reading skills, judging by their entrance examinations, whereas students in applied fields are more often at a disadvantage on verbally oriented tests such as are usual in the social sciences and to which the information tests in this study were no exception. For another reason, academic majors are higher ranking than nonacademic majors on the norms for the Minnesota Teacher Attitude Inventory, which purports to measure understanding of children's behavior and of effective teacher-pupil relationships; the behavioral tests in this study were designed to measure similar understanding and skills.

Because of these expectations, the following statistical hypotheses were tested:

1. That larger classes augmented by television would not differ significantly from smaller classes taught without television in the number of students scoring high or low on either Information tests or Behavioral tests;
2. That scores on Information tests would not be significantly correlated with scores on Behavioral tests;
3. That no observed characteristics of students would be significantly associated with higher or lower scores on either Information or Behavioral tests.

The nonparametric Median Test was selected as appropriate for testing the first and third hypotheses. All scores on all ordinal measures were ranked, medians were located, and frequencies in each category falling above and below the medians

were counted; differences between observed and expected frequencies were tested for significance by Chi square. To test the second hypothesis and that part of the third hypothesis which was concerned with associations between test scores and rankings on the MTAI and GPA's, correlation and regression analysis were used. Coefficients of correlation were computed for all pairs of scores and were checked for significance according to critical values of r . Multiple regressions were run in which the Pre-test, Information Test 1, Behavioral Test 1, GPA, and MTAI were treated as independent measures.

Results

Test of the first hypothesis, that the larger classes with television would not differ from the regular classes in the number of students scoring high or low on tests, did NOT show any significant difference. First, the number of students above or below the combined medians on the Pre-test, on Information Tests 1 and 2 and Final was not significantly greater from either type of class. Second, the number above or below the combined medians on Behavioral Tests 1 and 2 and Final was not significantly greater from either class. Third, the findings of "no difference" held true for the combined data for the year (both TV classes compared with both regular classes) as well as for the Fall and Spring classes analyzed separately.

Table 1 shows the percentage of students from each class who scored above the combined medians on the sums of scores on Information Tests and on Behavioral Tests.

Percentage of Class Scoring Above Test Medians

CLASS		INFORMATION	BEHAVIORAL
		*	
Fall Television	57	55.8 % n.s.	58.2 % n.s.
Fall Regular	33	44.2 % n.s.	41.8 % n.s.
	<u>90</u>		
Spring Television	82	61.9 % n.s.	61.9 % n.s.
Spring Regular	43	38.1 % n.s.	38.1 % n.s.
	<u>125</u>		

Total N 215 *nonsignificant at .05 level

Examination of the second hypothesis, that scores on Information Tests would not be significantly correlated with scores on Behavioral Tests, proceeded from two premises: 1) The confidence interval was set at .01 to avoid attributing significance to associations on a chance basis, since 432 correlations in all were run. 2) Relationships were not to be considered strong unless they held for a majority of the possible test combinations. First, associations between Information and Behavioral test pairs, which were administered at the same point in time, were examined for correlations. Then associations between each single test and all other tests were checked across the semester.

In the first search, the only significant association appeared between members of pair 2; pair 1 and the Final pair were not related. In the second search, associations again occurred with Information Test 2, this time for all Behavioral Tests across the semester. Although on both searches one-third of the possible associations indicated correlation, these seemed on closer examination to indicate uniqueness rather than generality. Since all correlations involved the single Information

Test 2, the conclusion was that this test was unique and that there was insufficient evidence of a significant relationship between Information Tests and Behavioral Tests on the strength of association with this one test. The second hypothesis was therefore accepted.

Table 2 shows the correlations between tests and indicates those which were significant at the .01 level or better.

TABLE 2

Correlations Between Information Tests and Behavioral Tests

TEST	INF ₁	INF ₂	INF ₃	BHV ₁	BHV ₂	BHV ₃
INF ₁	1.000	.399	.633	ns	ns	ns
INF ₂	.399	1.000	.589	.482	.567	.252
INF _F	.633	.589	1.000	ns	ns	ns
BHV ₁	ns	.482	ns	1.000	.578	.212
BHV ₂	ns	.567	ns	.578	1.000	.194
BHV _F	ns	.252	ns	.212	.194	1.000

Turning to the regression analysis, results showed that a student's final Information test score could be predicted on the basis of his first Information test together with certain measures of related ability. First, variables significantly related to the Information Final were the GPA, the MTAI, the Pre-test, and Information Test 1. Second, the relationship of Final Information Test scores to Behavioral Test 1 scores was nonsignificant. Third, variables ranked by their contribution to the Information Final were as follows:

<u>Variable</u>	<u>TV Classes</u>		<u>Regular Classes</u>		<u>Com bined Classes</u>	
	Rank		Rank		Rank	
INF Test 1	23.9	(2)	34.45	(1)	27.36	(1)
Y-intercept	29.07	(1)	13.90	(2)	22.97	(2)
GPA	11.34	(3)	11.90	(3)	11.51	(3)
Pre-test	3.77	(4)	10.73	(4)	6.72	(4)
MTAI score	2.32	(5)	1.55	(5)	1.93	(5)
<u>Predicted</u> score:	<u>70.40</u>		<u>72.53</u>		<u>70.94</u>	
X8-(Y)	76.40		76.87		76.57	

Certain important facts should be noted:

a. Lower Y-intercept for Regular classes = 13.90 compared to Y-intercept for Television classes = 29.07.

b. Higher value of the regression coefficient for Information Test 1 (X_4) on Y (Information Final) for the Regular class ($b_4 = 0.62$).

c. Small differences for the predicted and actual values of (Y) at the averages with Y (Television classes) = 70.40/76.40, Y(Regular classes) = 72.53/76.87, Y (Combined classes) = 70.94/76.56. These facts lead to an unexpected finding from the regression analysis: There was greater uniformity of information learning in the television classes than in the regular classes, as indicated by the Y-intercepts plus the markedly different slopes. (Y-intercept = 29.07, $b_4 = 0.62$ against the regular classes Y-intercept = 13.90, $b_4 = 0.86$.)

Prediction of Final Behavioral scores is less certain. First, variables significantly related to the Behavioral Final were the MTAI and Behavioral Test 1. Second, nonsignificant variables were

GPA, Pre-test, and Information Test 1. Third, the dominant considerations are that a) Regular class multiple regressions were nonsignificant, b) Television and Combined classes had a large Y-intercept equal to 64, and c) the main contributor to predicting the Behavioral Final score was the score on Behavioral Test 1 with the MTAI making a small contribution.

Examination of the third hypothesis, that no observed characteristic would be significantly associated with higher scores on either Information or Behavioral Tests, resulted in several findings.

1. At the .05 level, the following were significantly associated with the Sum of the Information Tests:

Sex: more women scored high than men;

Major: more Academic majors scored high than Nonacademic majors;

Marital Status: more married students scored high than single students.

2. One characteristic was significantly associated with the Sum of the Behavioral Tests:

Major: more Nonacademic majors scored high than Academic majors.

3. At the .01 level of confidence, the following correlations were significant:

GPA with Information Tests 1, 2, and Final;

MTAI with Information Test 2 and Final;

MTAI with Behavioral Tests 1, 2, and Final.

Table 3 shows a) the percentage of students who scored above the medians in the significantly associated categories, and b) the correlation coefficients found significant for the GPA and MTAI.

TABLE 3
Student Characteristics Associated With Test Scores

NOMINAL Characteristic		INFORMATION TESTS		BEHAVIORAL TESTS
SEX	Number		*	nonsignificant
Female	112	60.4 %		
Male	99	39.6 %		
MARITAL STATUS				nonsignificant
Married	76	52.8 %		
Single	135	47.2 %		
MAJOR				
Academic	137	75.5 %		41.5 %
Nonacademic	74	24.5 %		58.5 %

* % above median sig. at .05 level

ORDINAL Characteristic		INFORMATION TESTS		BEHAVIORAL TESTS
GPA	(M = 2.72)	215	.391*	nonsignificant
MTAI	(M = 38.7)	215	.356*	.395*

*Correlation r sig. at .01 level

Interpretation of the Results

The results of the data analysis lead to these conclusions:

1. That courses in development and learning can be taught in classes larger than the usual quota of 40 without jeopardizing learning outcomes when the larger classes are augmented by relevant televised illustrations and when programmed instruction is used to supplement lectures.
2. That tests of information about development and learning do not indicate how well students will perform on tests of skill in interpreting behavioral data; further, that students' acquisition of of factual knowledge is more predictable than is their acquisition of skill in interpreting behavior.
3. That majors from applied disciplines can be expected to achieve as well in educational psychology as do majors from aca-

ademic disciplines when criteria include performance on behavioral tests which are presented audio-visually.

The first conclusion is well supported by the findings of "no difference" in the achievement of classes enrolling 33 and 43 as compared to that of classes enrolling 57 and 82. The supposition that reduced contact between instructor and students would have an adverse effect on learning in the larger classes was not born out. In this case, there was on the contrary evidence that student learning was more uniform in the larger classes and that the uniformity could be attributed to practice in observing relevant examples of developmental and learning behaviors that had been televised. Undoubtedly an important factor in equalizing informational learning was the use of a programed text to supplement lectures.

The second conclusion is less definite. There was some support for the idea that students who were good at acquiring factual knowledge were also good at interpreting behavior, as evidenced by correlation between one information test and all behavioral tests. This was however a unique test and required further examination. It is possible that the information sampled by this particular test was more thoroughly learned by more students than was the information sampled on other tests. Information Test 2 was the only test that was based solely on the programed text by Gibson, and it required a different study approach from the usual text. Students were led step by step through a sequenced series of information frames, their responses were required at each step, and frequent review frames provided for overlearning. The program taught the content, in contrast to the

other more conventional text, which was a collection of chapters by different authors writing from different points of view. Any advantage in taking tests based on the latter would go to the better readers who were skilled in skimming for salient points. Before a more definted conclusion can be drawn, there is another hypothesis that should be tested: Information about educational psychology that is acquired by prograded instruction will be better retained and better transferred to skills in interpreting behavioral data than will the same information acquired by means of conventional textbooks.

The third conclusion is well supported by the finding that Nonacademic students outperformed Academic students on the Behavioral tests. Majors from the School of Letters and Sciences did not maintain their usual lead when test stimuli were audial and visual cues presented on films. This may be explained by the fact that high scores depended on accuracy of observation, ability to draw logical inferences from observed data, and ability to evaluate alternate courses of action. Therefore students whose aptitudes were more nonverbal than verbal would be better able to demonstrate their knowledge on Behavioral Tests than on Information tests. This unexpected finding has important implications for instructional evaluation, bringing into question the nature of the tests commonly used in educational psychology courses as a basis for assigning grades.

Other findings of association between student characteristics and test performance had fewer implications for instruction.

1. The higher scores for women than for men on Information tests confirm previous studies that show females at all grade

levels outperforming males on verbal-type tests that depend on reading. However, the expectation that females would also score higher on Behavioral tests was not born out; this may be further indication that the audio-visual nature of the Behavioral tests tends to negate the usual test-taking advantage of those with the better verbal aptitudes.

2. Higher scores for married students than for singles on the Information tests were as expected and support the supposition that married students would be more interested in the content of child development. However, the further expectation that married students would also score higher on the Behavioral tests was not born out; this may be indication that the more important differences are individual differences in behavioral or social intelligence. Some students are much more aware of behavioral cues than are others and are more perceptive of the probable meanings.

3. Correlations between GPA's and Information tests were as expected and support the common observation that good grades go with high test scores. The fact that GPA's did not correlated with Behavioral tests supports the belief that these tests do indeed measure a perceptual and social skill that conventional printed tests, which more often determine grades, do not. The regression analysis bears this out; where the GPA contributes considerably to predicting Information test scores, it drops out entirely as a predictive factor for Behavioral test scores.

4. The correlation between scores on the MTAI and on both types of tests was as expected. A high score on the Minnesota Teacher Attitude Inventory indicates that the student agrees with statements made by teachers judged superior for their

pupil rapport and classroom climate. Statements of the superior teacher are assumed to reflect both personal attitude of warmth and liking for children and an understanding of effective learning principles. If this is indeed so, then the MTAI ought to correlate with tests both of information and of behavioral judgment. In the present study, the MTAI showed an ambiguous association with Information tests but a positive association with all of the Behavioral tests.

Although correlation with Behavioral tests was strong, it should be noted that the MTAI contributed little more to predicting final Behavioral test scores than it did to final Information scores. Particularly in the Behavioral tests there appear to be other variables operating which were not accounted for.

Implications and Recommendations

A feasible solution to the problem of improving quality of instruction in educational psychology while at the same time accommodating more students is to go to larger classes in which instruction is augmented by televised illustrations and programmed instruction. It must be insisted, however, that increase in size should be accompanied by change for the better in media. The decline in contact between instructor and students in larger classes and lessened opportunity for active participation must be compensated for. A very real compensation can be provided by authentic up-to-date examples of children at different developmental stages and of teachers and pupils interacting such as are possible through television. Learning theory can come alive. By addition of programmed instruction, learning in larger classes can also become more uniform and class time that would otherwise

be spent in dissemination of information through lecture can be saved. Together, videotapes and programmed instruction can be tools for transforming classes in educational psychology from ones in which verbalization of theory predominates to ones in which relations of theory to teaching practice are exemplified. The gain in terms of the objectives for preparing teachers are well worth some loss of the more personalized instruction that is possible in smaller classes.

Such a solution should not be recommended, however, without first considering the effect on affective learning outcomes as well as cognitive achievement. There remains the question of students' possible adverse feelings toward being in large classes. Although the data was not made part of this report, measures of student attitude toward the experimental procedures were taken at the end of the year of course comparison. Students responded to a three part questionnaire about the class activities and instructional methods, the illustrations and other resources, and the physical arrangements of the classrooms. When the returns were tallied, the only noticeable differences between the two types of class were in response to the questions concerning media. Students in the larger television-augmented class were far more favorable toward all the resource materials used, including the programmed text, than were students in the regular class. But there was a surprising similarity in their responses regarding another matter. The majority in both classes, whether the large one or the regular, felt that their particular class was too large and wanted more opportunity for discussion.

It seems important to conclude this report with a caution about possible student dissatisfaction with any course in teacher education, no matter how relevant the illustrations and how effective the instruction as measured by tests, when there is not enough opportunity for students to talk over the course content among themselves. If larger classes in educational psychology are planned, they should provide for ample small group discussion. Some system of alternating large illustrated lecture sessions with discussion sessions that would be considerably smaller than the usual class size of forty would be good and would be the recommendation at this point.

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